

64. The sensor of claim 63 in which said inductor includes a plurality of current measurement windings wound about a separating material disposed about the powerline.

*Abraham* 65. The sensor of claim 64 in which said separating material has a low magnetic permeability.

66. The sensor of claim 65 in which said separating material is foam.

67. The modular core, self-powered powerline sensor of claim 57 in which said means for relatively coupling includes a communications core element disposed about the a.c. powerline and a plurality of windings disposed about said communications core element for coupling said signal to the a.c. powerline through non-contacting transformer action.

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#### REMARKS

The applicant appreciates the Examiner's thorough examination of the application and requests reexamination and reconsideration of the application in view of the preceding amendments and the following remarks.

The Examiner rejects the claims under 35 USC §102 and/or §103 in light of Abraham.

Abraham teaches powerline communications wherein the

powerline is tapped via wires connected to blocks 14 and 22, Fig. 6. See also Fig. 13 and Column 17, lines 16-45. Couplers 14 and 24 are always connected between the electrical line and the transmitter. See Column 7, lines 1-14.

The problems associated with such an invasive system are delineated by the applicant in the specification on pages 4-5 and is one reason that direct contact systems such as that shown in Abraham have not been widely used.

In contrast, one object of the applicants' claimed system is to provide powerline communications in a way that "does not require that a direct electrical connection be made to the powerline." See the specification, page 5, lines 14-16. The result is safer installation of the communications circuitry without service interruption. See page 5, lines 17-22.

In the above amended claims, it is made clear that the claimed system is truly non-invasive and includes means for reactively coupling the communication signals to the powerline without tapping the powerline.

In accordance with 35 USC §112, paragraph 6, these means include those structures disclosed in the specification and equivalents thereof.

In the specification, one structure corresponding to these means includes an inductive coupling arrangement including core element 50 and windings 52 for non-invasively

transmitting communications from sensor 10 to AC powerline 12 by non-contacting transformer action. See the specification, page 14, line 15 through page 15, line 1.

This structure is more specifically claimed in claims 40-42 and can also be used at the base station to reactively couple signals sent over the powerline originating at sensor 10 from the powerline to the base station. See the specification, page 19, lines 8-18. See also claims 43-46. Working in reverse, this structure can be used as a receiver to receive communications signals sent over the powerline from the base station to sensor 10. See the specification, page 20, lines 80-11, and claims 46-49.

Abraham teaches away from such a structure because Abraham requires a powerline tap and therefore claims 38-56 are patentable under 35 USC §102 and §103.

In claims 57-67, a structure is claimed wherein the controller is powered by non-contacting transformer action and the sensor itself senses, for example, current and voltage without tapping the powerline. In addition, all signals sent over the powerline are coupled to the powerline without tapping the powerline.

Thus claims 57-67 are patentable under 35 USC §102 and §103 as well since Abraham teaches away from both a self-powered unit and a non-invasive communications structure.

Each of Examiner's rejections has been addressed or traversed. Accordingly, it is respectfully submitted that

the application is in condition for allowance. Early and favorable action is respectfully requested.

If for any reason this RESPONSE is found to be INCOMPLETE, or if at any time it appears that a TELEPHONE CONFERENCE with counsel would help advance prosecution, please telephone the undersigned or his associate, Joseph S. Iandiorio, collect in Waltham, Massachusetts, (781)890-5678.

Respectfully submitted,

A handwritten signature in black ink, appearing to be 'Kirk Teska', written over a horizontal line.

Kirk Teska  
Reg. No. 36,291